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| 10 023,350 | 12 20 2001 | Darin A. Chan | 50432-528 | 5761 |

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[REDACTED] EXAMINER

NGUYEN, DAO H

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2818

DATE MAILED: 09 03 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

| Application No. | Applicant(s) |
|-----------------|--------------|
| 10/023,350 | CHAN ET AL |
| Examiner | Art Unit |
| Dao H Nguyen | 2818 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 21 July 2003.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 2-12, 14-16 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 2-12, 14-16 and 18-20 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1 Notice of References Cited (PTO-892)

4 Interview Summary, (PTO-413) Paper No.:

DETAILED ACTION

1. In response to the communications dated 07/10/2003 through 07/21/2003, claims 2-12, 14-16, and 18-20 are active in this application as a result of the cancellation of claims 1, 13, 17, and the addition of claim 20.

Acknowledges

2. Receipt is acknowledged of the following items from the Applicant:

Information Disclosure Statement (IDS) filed on 07/10/2003 and made of record as Paper No. 8. The references cited on the PTOL 1449 form have been considered.

Remarks

3. Applicant's argument(s), see Paper No. 9, filed 07/21/2003, with respect to the pending claim(s) 2-12, 14-16, and 18-20, have been fully considered, but they are not persuasive.

Specifically, Examiner does not agree with Applicant's argument that Bertin discloses exactly the opposite of what is/are recited in independent claims 14, 16.

Claims 14 and 16 of the pending application state that, a long with other limitations, a

first source/drain regions formed in the first portion, and a second transistor with second

source/drain regions formed in the second portion, wherein the depth of the second source/drain regions is/are greater than the depth of the first source/drain regions. As shown in figure 13 of Bertin, and also asserted by Applicant in page 7 of the Amendment filed 07/21/2003 (Paper No. 9), the depth of source/drain regions in the thicker portion (second/left portion) is greater in thickness than the source/drain regions in the thinner portion (first/right portion). Hence, Bertin discloses exactly the same what is/are recited in independent claims 14, 16.

For the above reasons, the rejections in the previous Office Action is maintained, and is rewritten in light of the newly amendment as follows.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 19-20 is/are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed

show or describe the claimed semiconductor device wherein the first source drain

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regions and the second source/drain regions do not extend to the insulating layer. As shown in figures 4 and 5 of the pending application, all of the source/drain regions (40, 42) do extend to the insulating layers 12. None of the figures shows the claimed limitation.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraph of 35 U.S.C. § 102 in view of the AIPA and H.R. 2215 that forms the basis for the rejections under this section made in the attached Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language

7. Claim(s) 16 is/are rejected under 35 U. S. C. § 102 (b) as being anticipated by

U.S. Patent No. 5,909,400 to Bertin.

Regarding claim 16, Bertin discloses a semiconductor device, as shown in figures 7-13, comprising:

an insulating layer 130;

portion (right portion) and a second portion (left portion); and

a first transistor is formed in the first portion and a second transistor is formed in the second portion (figure 13),

wherein a thickness of the second portion is greater than a thickness of the first portion, and the first transistor includes first source/drain regions and the second transistor includes second source/drain regions, and a depth of the second source/drain regions greater than a depth of the first source/drain regions. See figures 6-8, 13, and column 4, line 29 to column 5, line 40. See also the above remarks.

Claim Rejections - 35 U.S.C. § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2-12, 14, and 15 is/are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 5,909,400 to Bertin, in view of the following remarks.

Regarding claim 14, Bertin discloses a method of manufacturing a semiconductor device (figures 7-13), comprising the steps of:

providing a silicon layer 122 over an insulating layer 139; the silicon layer

partially growing the second portion (to form the thick portion) of the silicon layer 122, wherein a thickness of the second portion is greater than a thickness of the first portion; and

forming a first transistor in the first portion and a second transistor in the second portion, wherein

the first transistor includes first source/drain regions and the second transistor includes second source/drain regions, and a depth of the second source/drain regions greater than a depth of the first source/drain regions. See the above remarks and figures 6-8, 12 and 13 and column 6, line 23 to column 7, line 9.

Though Bertin partially grows the second portion of the layer 122 to form a thick portion (122+ 121) and a thinner portion (122) (figures 12, 13) instead of first forming a thick layer and then partially removing a portion of the thick layer to form a thick portion and a thinner portion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Bertin so that the same thick and thin portions (122+ 121) and (122), respectively, being formed by first growing a thick layer and then partially removing the thick layer, since such a modification would have involved a mere change in the method of forming the device, and it would involve only routine skill in the art. (Note further that if the method of manufacturing the semiconductor device comprising (in addition with other limitations) forming a silicon

could not be obviously modified from that of Bertin, then it is clearly that the method of

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Bertin is a distinct method which is used to manufacture the same device, or that the device as claimed in this pending application can be made by another and materially different process (See further MPEP § 806.05(f)).

Regarding claim 2, Bertin discloses the method wherein the first and second portions of the silicon layer initially have the same thickness. See column 6, lines 23-29.

Regarding claim 3-10, Bertin discloses all the claimed limitations. Note that these limitations are very well known in the art since the technique of etching and using resist mask in etching is very common in the art (See US Patent Application Publication No. 2001/0045561 by Hata et al., for example). See also column 6, line 23 to column 7, line 9 of Bertin.

Regarding claims 11 and 12, Bertin discloses all the claimed limitations. Note that it is obvious to one of ordinary skill in the art that isolating features 123 could be formed either before or after the first portion of the silicon layer being partially removed, since it is obvious that any of such order of forming the isolating features would not make any change in the spirit and scope of the invention of Bertin.

Regarding claims 15 and 18, Bertin discloses the semiconductor device

silicon is greater than the diffusivity of the first dopant into silicon. However, it would

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have been obvious to one having ordinary skill in the art at the time the invention was made that the diffusivity of the second dopant into silicon could be greater than, less than, or equal to the diffusivity of the first dopant into silicon since applicant has not disclosed that such diffusivity of the second dopant into silicon being greater than that of the first dopant into silicon solves any stated problem or is for any particular purpose, and it appears that the invention would perform equally well with the diffusivity of first dopant and the second dopant being either the same or different.

Conclusion

10. **THIS ACTION IS MADE FINAL.** A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

examiner should be directed to Dao Nguyen whose telephone number is (703) 305-

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1957. The examiner can normally be reached on Monday-Friday 9:00am - 6:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (703) 308-4910. The fax numbers for all communication(s) is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Dao H. Nguyen
Art Unit 2818
August 26, 2003



David Nelms
Supervisory Patent Examiner
Technology Center 2800